ABSTRACT

Charles University, Faculty of Pharmacy, Hradec Králové

Field of study: Specialist in laboratory methods

Author: Bc. Tomáš Hampl

Supervisor: PharmDr. Ondřej Janďourek, Ph.D.

Title of diploma thesis: *Mycobacterium tuberculosis* as causative agent of grave illness

The aim of this diploma thesis is to deal with tuberculosis, describe the pathogen, taxonomic classification, describe the origin, course and clinical manifestations of the disease, diagnosis, including laboratory diagnostics, epidemiology of tuberculosis, treatment and prevention.

Tuberculosis (TBC) is one of the deadliest infectious diseases in the world caused by bacterium *M. tuberculosis* in humans. TBC is sometimes referred as a disease of the past, but the recent rise in cases of the disease, and especially the spread of forms of drug-resistant TBC, makes the disease very dangerous. Currently, a major problem is the alarming rise in resistant and multi-resistant tuberculosis, which is not counteracted by commonly used first-line drugs. Therefore, there is a constant emphasis around the world on discovering and testing new potential antituberculotics that could help patients with resistant and multidrug-resistant TBC.

In the experimental part, the thesis deals with screening of antimycobacterial activity of potential antituberculotics against strains of the genus *Mycobacterium* (*M. smegmatis, M. aurum, M. tuberculosis*) using a microdilution broth method, evaluation of the obtained results and their interpretation in order to determine relationship between activity and structure of tested compounds.

Part of this work was focused on screening of 81 potential antituberculotics in 3 series. The most effective antituberculotics appeared to be 6, 69, APC-AT, APC-AT-3Me, APC-AT-Adam. These substances should certainly be given further attention in research to confirm their effectiveness, and more extensive testing should be carried out.

Keywords: mycobacteria, tuberculosis, antituberculotics, microdilution broth method, minimum inhibition concentration